



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



# Workshop report: Participatory Integrated Climate Services for Agriculture (PICSA) Intermediary Training, Dodoma, Tanzania

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# Participatory Integrated Climate Services for Agriculture (PICSA) Intermediary Training

**Dodoma, Tanzania, September 2015**

Workshop Report

CGIAR Research Program on Climate Change,  
Agriculture and Food Security (CCAFS)

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## Abstract

Since 2014, World Food Programme (WFP), CGIAR Research Program Climate Change Agriculture and Food Security (CCAFS), Tanzania Meteorological Agency (TMA) and University of Reading (UoR) have been hosting trainings of extension workers—or, intermediaries—and sharing climate information services. An intensive five-day training on Participatory Integrated Climate Services for Agriculture (PICSA) approach was held September 7-11, 2015 in Dodoma, Tanzania to equip Dodoma district intermediaries with the capacity to provide farmers with locally relevant climate, crop and livelihood information. About 42 intermediaries from the Prime Ministers' Regional Administrative Office, local government, and Tanzania Red Cross Society were trained on a number of areas from PICSA field manual and other topics, such as integrating participatory decision-making tools under different weather conditions and seasonal and short-term climate forecast. Through the training, all intermediaries were able to make interpretation and opt for best option based on local seasonal forecast. For effective implementation of PICSA Process at local levels, training participants formulated work plans and shared copy with facilitators and district supervisors for close follow-up. All trained intermediaries also received a special assessment form to distribute to farmers to complete at the end of the season. A one-day farmer training workshop immediately followed, offering the freshly trained intermediaries an opportunity to learn by doing.

### Keywords

Planning and Review Workshop; Climate Services; Smallholder Farmers; PICSA; Resource Allocation Maps; Seasonal Calendars; Livelihood Options; Intermediaries; Tanzania.

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## Acronyms

ARI	Agricultural Research Institute
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CICERO	Center for International Climate and Environmental Research - Oslo
GFCS	Global Framework for Climate Services
PICSA	Participatory Integrated Climate Services for Agriculture
SMS	Short Message Service
TMA	Tanzania Meteorological Service
WFP	World Food Programme
WMO	World Meteorological Organization



## Introduction

Smallholder agriculture continues to play a key role in ensuring food security and livelihood options for nearly 75% of rural Tanzanian farmers and pastoralists. Until recently, the Tanzanian agriculture landscape had been characterized by small-scale farms and rain-fed farming. Many smallholder farmers live in the most vulnerable and marginal landscapes—such as hillsides, drought prone areas, and flood plains—exposing them to a variety of climatic hazards and limited access to reliable climate/weather services, extension services, markets, and technology (Salami et al. 2010). Effective climate information and advisory services have great potential to inform smallholder farmers' decision-making in the face of increasing uncertainty, improve the management of climate-related agricultural risks, and help farmers adapt to change. These services strive to ensure development and provision of science-based and user-specific information for decision making at all levels of society (Vaughan and Dessai 2014). They have great potential to help society cope with and adapt to climate variability and change.

Tanzania is one of the countries benefiting from Global Framework for Climate Services (GFCS) Adaptation Programme, a multi-agency initiative that aims to provide necessary tools and understanding to embed climate information and services into decision-making to address their climate adaptation challenges. The program envisages building integrated frameworks and supporting existing initiatives in climate services, food security, health and disaster risk reduction sectors. As part of this initiative, CGIAR Research Program on Climate Change, Food Security and Agriculture (CCAFS) in collaboration with World Food Program (WFP) conducted an intensive four-day training on Participated Integrated Climate Services for Agriculture (PICSA) approach for 42 intermediaries from Kondoa district in Dodoma region, Tanzania, followed by a one-day farmer training workshop, from September 7-11, 2015.

## Intermediary Training in Kondoa District

The intermediary training on Participatory Integrated Climate Services for Agriculture (PICSA) approach aims to enable extension workers to help farmers and pastoralists make informed decisions based on accurate, location specific, climate and weather information, locally relevant crop, livestock and livelihood options (Dorward et al. 2015). It also aims to enable stakeholders, particularly farmers and pastoralists, to use participatory tools which can help support their decision-making process. The training workshop in Dodoma, organized by WFP and CCAFS with support from Tanzania Metrological Association (TMA) and the University of Reading (UoR), targeted 42 intermediaries that came from Kondoa district in Local Government Authority (LGA) and Tanzania Red Cross Society.

### Process and preparation for the training

A number of activities were undertaken at different levels to ensure a successful training of 42 selected intermediaries. CCAFS and UoR developed and reviewed the PICSA training materials and training programme. CCAFS and UoR also worked with TMA to prepare historical climate data and graphs for the training. WFP and CCAFS visited Kondoa district for preliminary meetings and setting the scene with local government authorities at district level. WFP further worked hard to liaise with potential stakeholders working in Dodoma and Kondoa district to identify venue, set participants criteria and inviting them to attend and benefit from the training. At all stages, from preparation to implementation, the process benefited from strong commitment from all partners. Most of the participants were agriculture and livestock extension officers, seed suppliers, and Red Cross Volunteers. Facilitators came from CCAFS, WFP, TMA, Center for International Climate and Environmental Research - Oslo (CICERO), World Meteorological Organization (WMO), and Hombolo Agricultural Research Institute (ARI-Hombolo).

### Training Contents, Activities & Methods

The five-day training was intended to build the capacity of the intermediaries to better work with smallholder farmers and pastoralists, and enable them to use a unified and integrated combination of climate/weather forecasts and participatory tools to make informed agricultural planning decisions. The training involved both in-class and field components. The first three days focused on training district, ward, and village professionals who regularly

interact with smallholder farmers and pastoralists in Kondoa district. The fourth day was used for field visit and training at a village. The final day of the training was used to reflect on the village training outcomes and make adjustments where necessary.

Generally, the training focused more on three main components:

1. The provision of information by field staff to farmers on climate and weather;
2. The provision of information by field staff to farmers on crop, livelihood and livestock options and their risks; and
3. A set of participatory tools to enable farmers to use this information in their planning and decision making.

The training covered a number of areas from PICSA field manual (see Appendix 1 & 2). This training involved participants in formulating resource allocation map and seasonal calendars to help farmers organize and identify their resources and plan activities (Fig. 1). Formulation of RAM and seasonal calendars also help farmers to plan their farming activities while taking into account weather and climate issues in mind in a season.



Figure 1. Kondoa intermediaries working on resource allocation map. Photo by Meaghan Daly.

The training participants also were exposed to the concept of climate variability and climate change (Fig. 2). Using historical climate information from their area, the Kondoa district, the participants calculated seasonal rainfall totals, season specified length, and start and end of rainfall season for their area. This topic helped extension workers better understand the local

climate to appropriately advise and help farmers make informed decisions about crops, livestock and livelihood options.

Furthermore, participants learned how to help farmers review livelihood options and crop practices, integrate information, and use participatory decision making tools to identify the best options under different weather conditions. These skills enable farmers to have a range of different options which will help them in decision making and planning for the most suitable crop practice, livelihood, and/or livestock option.

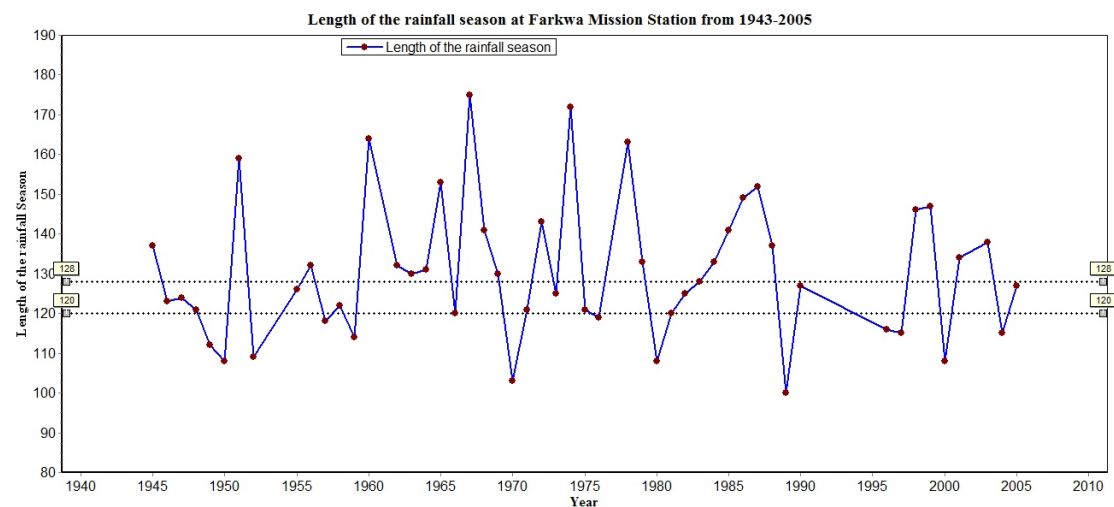


Figure 2: Length of rain seasonal at Farkwa station in Kondoa district (TMA 2015)

Another important aspect covered was formulation of participatory budgets based on the appropriate livelihood/livestock/crop practice chosen. This budget planning exercise helps farmers determine whether they would have a positive cash balance at the end of a crop season. If farmers can project positive cash budget, they would proceed with implementing the livelihood/livestock/crop practice chosen. If not, they would drop it for another one.

Participants were also trained on seasonal and short term climate forecast—how they are produced and communicated (for example, via mobile phone SMS) as well as the information they convey, including the implied advantages and limitations to farmers and pastoralists. The role of mobile phone SMS on dissemination of seasonal and short term forecasts and early warnings was also discussed. The training also covered the concept and possible local effects of El Nino as forecasted for October-November-December 2015 (Fig. 3). To put their training to practice, participants were given the 2015-2016 seasonal forecast for Tanzania and a

downscaled seasonal forecast for Kondoa district to interpret. All intermediaries were able to make interpretation and opt for best option depending on local seasonal forecast.

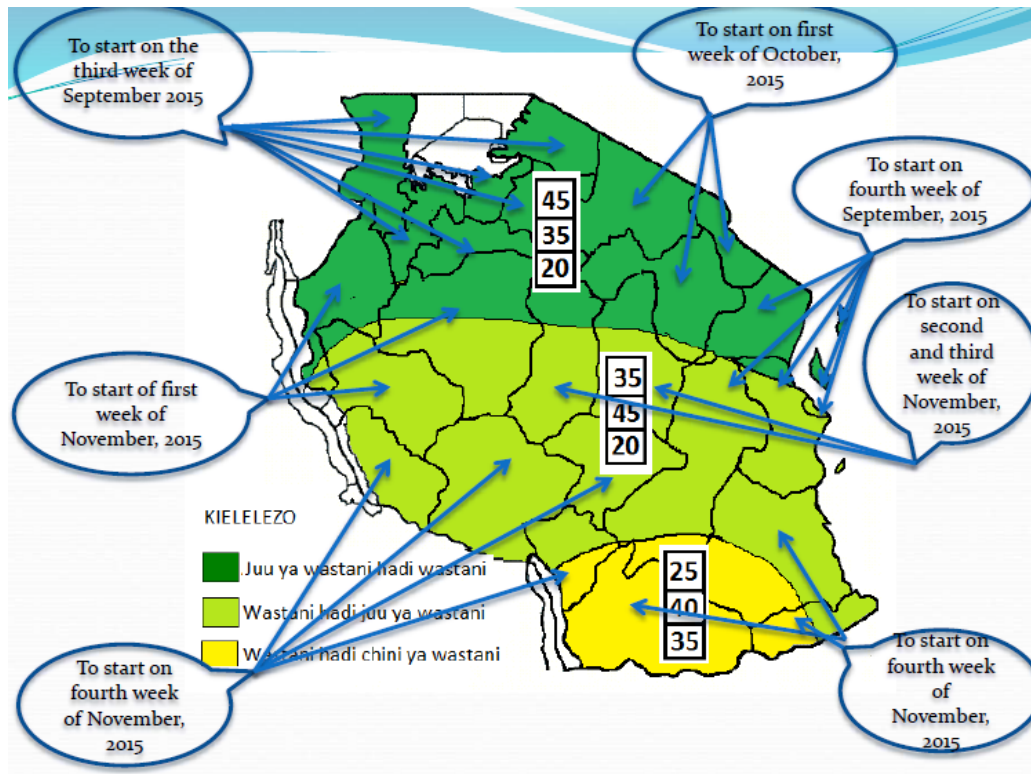


Figure 3: Indicators for October-November-December 2015 (Tanzania Meteorological Agency)



Figure 4. Kondoa intermediaries listening to facilitator. Photo by Sixbert Mwangi.

The fourth day of the training was spent in Mlowa Barabarani village in Dodoma, allowing the participants work hands-on with small groups of farmers. This proved to be important and

useful as participants gained both skills and confidence. On the fifth and final day of the training, the participants reflected on the field work, provided their feedback on the training, and reviewed the lessons. Following the review, the trained participants and training facilitators engaged in a practical planning session to develop implementation plans and charts for their respective work locations.

## Field Visits: Training for Farmers

At the Mlowa Barabarani village in Dodoma, about 55 smallholder farmers were able to participate in the hands-on field visit and training exercise. The in-training intermediaries formed seven, six-person groups to serve as facilitators for the farmers' training, which served both as a practicum for the intermediary training and as a trial for the PICSA approach. The PICSA training aims to help farmers get to know their resources within the village, the local climate and climate-related challenges, and the role of climate variability and climate information in their decision-making and development of a participatory budget. Facilitators and district supervisors had an opportunity to assess first-hand the effectiveness of the PICSA approach and identify areas that need improvement. Since English is not commonly used in the region, the training to farmers in the village was conducted in Swahili, a national language.

Farmers were invited to share the traditional indicators that they use to anticipate weather and climate conditions and ask any questions. TMA then shared with farmers an overview of seasonal and short term forecasts and how to utilize the forecast products. Farmers provided feedback that the quickest and most effective ways for them to receive climate information include radio and mobile phone SMS. This kind of direct interaction and discussion is highly beneficial as it provided TMA with insights on how farmers react or make decision during uncertain climate condition and, at the same time, familiarized farmers with seasonal and short term forecasts issued by TMA in order to trust and use them.

As the training continued, participating farmers followed instructions to develop a time series bar graph of recorded seasonal rainfall totals, drawn to scale, and validate it against their collective memory. Farmers were then taken through the process of sorting the rainfall series

onto a probability-of-exceedance graph (Fig. 5), developing a budget accordingly, and assessing crop and livelihood options.

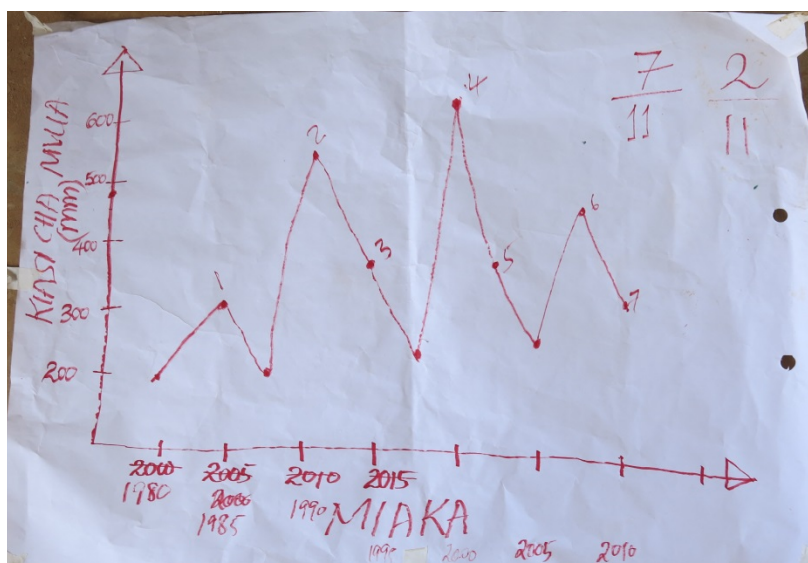


Figure 5: Rainfall probability graph at Mlowa Barabarani developed by villagers. Photo by Graham Clackson.

The farmers expressed appreciation for the training and the opportunity to interact on common goals, and found the training topics highly relevant and useful to their seasonal farming practices. Some lamented that this kind of training and advices came too late. While village farmers have received various trainings in the past, there have not been training specifically on climate services. Amos Launa, Mlowa Barabarani village chairperson, urged extension workers to proceed with training their village leaders and committees so they can help scale up and spread the knowledge to many more farmers who did not have an opportunity to participate. It is evident from the positive responses that PICSA training is beneficial to the farmers in the village and distinctive from other types of training have received.

Trained intermediaries confirmed to have mastered the course and were able to train farmers on PICSA approach without any difficulty. Intermediaries reported to have enjoyed the field visit. While training on some topics went well, several others such as participatory budgeting, historical data interpretation, and calculating probability were more challenging for farmers. Nevertheless, farmers enjoyed interacting with facilitators, learning of the different livelihood/livestock/crop options that can help minimize the risks (Fig. 6), and knowing that there are resources available in their localities.



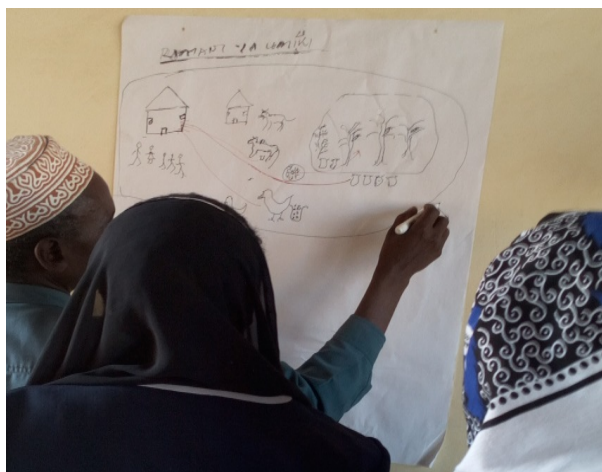


Figure 6. Farmers working on village resource allocation map. Photo by Bunana.

## Implementation of PICSA in Kondoa district

The training participants formulated work plans for effective implementation of the PICSA process at local levels, including the topics and the week they would be shared with farmers, in the coming four months of the season. Each participant discussed and shared the plan and their contact information with facilitators and district supervisors for close follow-up. The participants, now trained intermediaries, received a special assessment form for farmers to complete at the end of the season. TMA got connected with all trained local intermediaries so that they can receive seasonal and short term downscaled climate information and advisories. As the local language is Swahili, translating PICSA field manual and terminologies to Swahili would make the information easier to understand and more accessible to the local communities.

## Conclusions

The implementation of PICSA and climate services need strong collaboration by different stakeholders, especially the meteorological agency, the agricultural sector, farmers and pastoralists, researchers, and local government authorities. The intermediary training have potentials to build base for intermediaries and provide them with experience needed for implementation of the PICSA process in delivering climate services, which will help enable more farmers to make appropriate decisions in choosing crop practices and livelihood and



livestock options for farming. The field visit and practicum is an important component of the training to help intermediaries review the training information and put their new skills and knowledge to practice as they plan for the implementation of the PICSA approach at the local level. Field trainings and close monitoring and evaluation are also important to involve local stakeholders for sound outcomes, ensuring that both intermediaries and farmers/pastoralists have the opportunities to make decisions on what crops to grow or animals to keep at a given seasonal forecast, as well as helping the community reduce risks in the face of climate variability.

# Appendix 1: Programme for Intermediary Trainings on Participatory Climate Services Approach

Training for Kondoa District Extension Officers in Dodoma, Tanzania, September 7-11, 2015

This training aims to equip stakeholders, especially intermediaries with capacity to provide farmers with locally relevant climate, crop and livelihood information. The training programme is facilitated by staff from University of Reading (UK), World Food Programme, Tanzania Meteorological Agency and CCAFS.

The training focuses on three main components:

1. The provision of information by field staff to farmers on climate and weather
  - Historical climate information – how is local climate changing and how can farmers respond?
  - How can we use historical rainfall and other data to identify what farming and livelihood practices are best suited to local conditions?
  - How can we use the new, improved, downscaled seasonal forecast to plan?
  - How to integrate the use of short term forecasts sent by SMS / mobiles to inform farmers?
2. The provision of information by field staff to farmers on crop, livelihood and livestock options and their risks
  - Which crops / crop varieties are suitable for the local area and for different types of season (e.g. good, medium and poor seasons)?
  - What detailed management practices are most suitable for different seasons and conditions (e.g. planting dates, fertiliser input levels)?
  - What livestock and livelihood options facilitate improved coping and adaptation for households and communities?
3. A set of participatory tools to enable farmers to use this information in their planning and decision making
  - How to use a set of participatory tools to help individual farmers identify which crop, livelihood and livestock options suit their individual circumstances – identifying “options by context.”

DAY 1			
Time	Topic	Responsible	Step
8.30-9.00	Registration	NU	
9.00-9.10	Introduction and welcome	JK	
9.10-9.30	Workshop opening	All	
9.30-9.40	Course aims and outline	PD	
9.40-10.00	An overview of climate services and the PICSA Approach	PD	
10.00-10.20	Break and Group Photo	All	
10.20-11.00	What are climate, climate variability and change Incl. vulnerabilities and impacts	EI (SM)	
11.00-1:00	Current farming & livelihoods in your location (using RAMs, Seasonal Calendars for crops and livestock) (Exercise)	GC (RAMs) SM/AK (Calendars)	A
1.00-2.00	Lunch	All	
2.00-2.30	Historical climate information (what is it, where is it from, who collects it and how is it produced)	EI	B
2.30-2.40	Historical Climate information for your area 1: Explanation of graphs	EI	
2.40-3.40	Historical Climate Information 2: What has happened to the climate, what does this mean + what are the potential causes (Exercise)	PD/EI	B
3.40-4.00	Evening Tea		
4.00-5.10	Using historical climate graphs to work out probabilities (Exercise)	GC	C
5.10-5.20	Review of day	All	
DAY 2			
8.30-8.40	Recap from day 1 and timetable for day 2	JK	
8.40-9.10	Introducing the use of probability of exceedance graphs	TMA/PD	
9.10-10.30	Identifying and selecting suitable crops and varieties (using crop tables) (exercise)	GC/SM	D
10.30-10.50	Break	All	
10.50-12.00	Crop management options	PD/SM	D
12.00-12.30	Livestock and livelihood options (including livelihood and livestock options matrix) - intro	GC/DN	D
12.30-1.30	Lunch	All	
1.30-2.40	Livestock and livelihood options (including livelihood and livestock options matrix)-exercise	GC/DN	D
2.40-3.00	Farmers as decision makers & the role of facilitators What are 'options by context'	PD/GC	E
3.00-3.30	Exploring/planning for selected crops, livestock& livelihood options (PBs, RAMs) - PBs - Intro	GC/SM	F
3.30-3.45	Evening Tea	All	
3.45-4.45	Exploring/planning for selected crops, livestock& livelihood options (PBs, RAMs) - PBs - exercise	GC/SM	F
4.45-5.00	The farmer decides - revisiting RAMs and seasonal calendars	PD/GC	G
DAY 3			

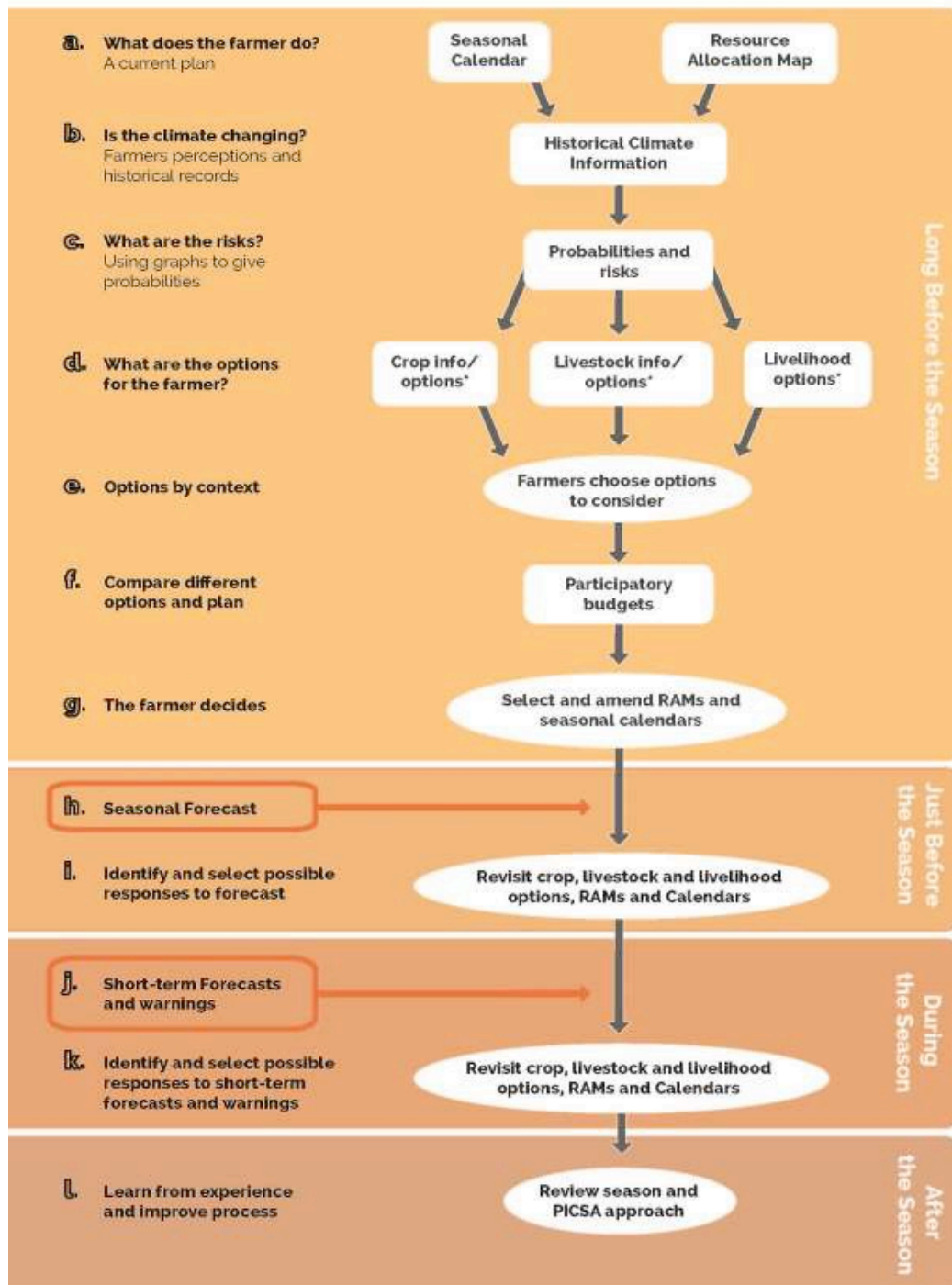
8.30-8.40	Recap from day 2	JK	
8.40-9.00	Enabling implementation (the role of seed supplies, markets, etc.)	AK/SM	G
9.00-9.25	Preparing to adjust plans? Option A: Improved downscaled seasonal forecast (if available). What is it? How is it produced and communicated, what are its advantages and limitations? Option B: What is the Seasonal Climate Forecast as widely used at present How is it produced and communicated, what does it include, what are its advantages and limitations? What future developments may become available (CPT)?	MM	H
9.25-10.00	Understanding and using the seasonal forecast 1 - how does this effect plans - exercise	MM	I
10.00-10.30	Understanding and using the seasonal forecast 2 - using historical data - exercise	PD/GC	I
10.15-10.45	Break		
10.45-11.05	What is El Nino	MM	H
11.05-11.45	What are the possible effects of El Nino (using probability of exceedance graphs)	TMA/UoR	H
11.45-12.15	Short term forecasts, severe weather warnings & updates to the SCF - how and when are they produced and communicated	MM	J
12.15-1.00	Interpreting SMS forecasts and warnings (exercise)	MM	K
1.00-2.00	Lunch	All	
2.00-2.45	Interpreting SMS forecasts and warnings (exercise cont.)	MM	K
2.45-3.00	Recap of process and main components	PD/GC	
3.00-3.30	Planning for field day	GC/WFP	
3.30-3.45	Evening Tea		
3.45-3.55	Tips for facilitation	GC/PD	
3.55-4.45	Prepare materials and practice exercises for field day	All	
4.45-5.00	Review of day	GC/PD	
<b>DAY 4</b>			
8.00-4.30	Field day	All	
<b>DAY 5</b>			
8.30-10.00	Reflection, feedback, lessons learned	All	L
10.00-10.20	Break	All	
10.20-10.35	Review of materials used with farmers	All	
10.35-10.50	Recap on PICSA and key components	PD	
10.50-12.00	Practical planning for implementation	JK, PD, GC, SM, AK, DN	
12.00-1.00	Planning support for participants during implementation and to enable learning, reflection, sharing and reporting	JK, SM	
1.00-2.00	Lunch	All	
2.00-3.00	Monitoring and evaluation	JK, PD, GC, SM, AK, DN	L
3.00-4.00	Finalise any practical issues for implementation	JK, PD, GC, SM, AK, DN	

4.00-3.30	Course evaluation	JK, PD, GC	
4.30-5.00	Certificates and close	All	
5.00	Evening Tea		

Facilitators:

Peter Dorward (PD), Graham Clarkson (GC), Juvenal Kisanga (JK), Edwin Igenge (EI),  
 Mecklina Merchades (MM), Sixbert Mwanga (SM), Alic Kafasalire (AK), Dominic Nyirongo  
 (DN), Neema Urassa (NU)

## Appendix 2: Overview of the PICSA Process



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